

**Ballast Water Management:
New International Standards and
National Invasive Species Act Reauthorization**

Testimony of

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and the

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Introduction

Good morning. My name is Catherine Hazlewood, and I am the Clean Oceans Program Manager for The Ocean Conservancy (TOC). With over 80 staff and 150,000 members, The Ocean Conservancy strives to inform, inspire, and empower people to speak and act for the oceans through science-based advocacy. Headquartered in Washington D.C., TOC also has offices in Alaska, California, Washington, Florida, Maine, Virginia, and the U.S. Virgin Islands.

Thank you for the opportunity to testify today regarding the International Maritime Organization's (IMO) recent adoption of the International Convention for the Control and Management of Ship Ballast Water and Sediments,¹ and U.S. reauthorization of the National Invasive Species Act (NISA).² The Ocean Conservancy has significant experience working to prevent and control the spread of aquatic invasive species. Our efforts to date have ranged from local to international projects, and include:

- Co-sponsoring and co-writing the first state law (California) in the nation to mandate controls on ballast water discharges into state waters;
- Petitioning the Environmental Protection Agency to regulate ballast water discharges under the Clean Water Act;
- Supporting regional invasive species solutions as a member of the Western Regional Panel of the Aquatic Nuisance Species Task Force, which was set up under NISA;
- Supporting national invasive species solutions as a current appointee to the National Invasive Species Advisory Committee, which was set up under Executive Order 13112;
- Co-sponsoring and co-hosting several conferences on marine invasive species;
- Commenting to EPA on the agency's failure to consider invasive species in the development of effluent guidelines for the aquaculture industry, and in the development of impaired waters lists under the Clean Water Act;
- Commenting to NOAA regarding the proposed voluntary "Code of Conduct" for open ocean aquaculture facilities and its lack of regulatory authority to prevent or redress the discharge of an invasive species from an aquaculture facility;
- Testifying and providing comment to the Coast Guard as well as Congress on existing ballast water treatment standards and on the progress of NISA in controlling marine invasives; and
- Advocating, in partnership with Northeast-Midwest Institute and other stakeholders, for increased appropriations for programs authorized by NISA.

¹ Hereinafter IMO Ballast Convention.

² Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended by the National Invasive Species Act of 1996, P.L. 104-332; U.S.C. §§ 4701 *et seq.*

Additionally, TOC has worked since the 1980s on national and international implementation of laws to prevent pollution from ships, including MARPOL and its implementing legislation, the Act to Prevent Pollution from Ships, the Clean Water Act, NISA, The Oil Pollution Act, and legislation to regulate pollution from cruise ships. In each of these efforts, we have worked to ensure the U.S. leads the rest of the world by example, through strong domestic legislation in addition to the successful negotiation of international agreements.

The Ocean Conservancy is deeply concerned with the slow pace of both international and U.S. aquatic invasive species prevention and control efforts to date. Last month's adoption of IMO's Ballast Convention was a reasonable first step toward a solution to a global problem, yet the Convention alone does not provide the national tools or mechanisms needed to prevent, mitigate and regulate the spread of invasive species in the U.S.

We must do more because invasive species bring such enormous costs to our nation, both environmentally and economically. Fortunately, we can do more; we possess the technology and the resources to set a higher bar in national legislation for ballast water management. We must address several other vectors of invasive species, which the IMO Ballast convention does not address. We also need to provide our federal agencies with all the necessary tools, mechanisms and funding to prevent and control the spread of invasives, such as rapid response, screening, and mitigation procedures.

Congress has the opportunity to accomplish much of this through reauthorization of the existing NISA, legislation for which is currently pending before the House and Senate.³ The National Aquatic Invasive Species Act of 2003, currently before the Transportation and Infrastructure Committee, and the accompanying Aquatic Invasive Species Research Act currently before the House Resources Committee, together would go a long way to:

- comprehensively address deficiencies and gaps in NISA's existing ballast water management provisions;
- establish a process for screening and regulating intentional imports of potentially invasive species, such as for aquaculture, live food, the pet/aquarium trade, and fisheries; and
- enhance research efforts through improved funding, coordination among agencies, standardization and access to data.

³ In the House, the NISA reauthorization legislation is comprised of two bills, The National Aquatic Invasive Species Act of 2003, currently before the Transportation and Infrastructure Committee, (H.R.1080), and the Aquatic Invasive Species Research Act, currently before the Resources Committee, (H.R. 1081). In the Senate these two bills are merged as one bill, the National Aquatic Invasive Species Act of 2003, (S. 525), which was referred to the Environment and Public Works Committee.

In the Senate, the two bills are joined as a single piece of legislation, reflecting their intended complementary nature. TOC urges the House to act on both bills to provide the first comprehensive attempt to address aquatic invasive species in the United States.

The Committee will hear testimony from the Coast Guard and other experts regarding the specific ballast water management standards negotiated at the IMO Ballast Convention. We support full participation by the United States in the Convention in order to provide world leadership in the dissemination of technology and research in this area. However, the United States can and should employ more stringent controls domestically through utilization of existing law and reauthorization of the National Invasive Species Act.

In the following testimony, I will describe the impacts of aquatic invasive species, drawing from earlier testimony TOC has provided to Congress. Second, I will briefly discuss the Convention's provisions, offering support for the recommendation that United States enact more comprehensive legislation nationally. Third, I will outline the general advantages of the NISA reauthorization legislation as introduced in providing the comprehensive approach we need. I will include additional recommendations where applicable for strengthening the legislation to prevent further permanent damage to the nation's waterways and the people, wildlife and industries that depend on them.

Aquatic Invasive Species: Impacts and Vectors

Environmental Costs

The ecological damage from invasive species⁴ is enormous. According to the IMO, invasive species are one of the four greatest threats to the health of the world's oceans, along with other pollution, overexploitation of marine resources, and destruction of marine habitat.⁵ It is now scientifically accepted that aquatic invasive species introductions "are a serious problem," that "the number of species successfully invading new habitats is increasing at an increasingly higher rate," and that the damage caused by aquatic invasives is in the billions of dollars and climbing.⁶

⁴ This testimony uses the term "invasive species" to refer to "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health," where "alien species" are, "with respect to a particular ecosystem, any species, including its seeds, eggs, spores or other biological material capable of propagating that species, that is not native to that ecosystem." Executive Order 13112, "Invasive Species" (Feb. 3, 1999).

⁵ See The Ocean Conservancy, *Ocean Invasion*, BLUEPLANET, vol. 1, issue 2, p. 18 (Spring 2002).

⁶ *Id.* at 9.

Invasive species are the number two threat to endangered and threatened species nationwide, second only to habitat destruction.⁸ They consume native species and their food sources. They reduce the genetic variability of native species through cross-breeding. Aquatic invasive species are unlike chemical or conventional pollutants in that “waters. . . do not have the capacity to ‘assimilate’ [invasive species] without changing the species abundance and diversity of the waters, which is a change to the biological integrity of the system.”⁹ In other words, once a system is invaded, simply eradicating the invasive species, even if possible, will not restore the ecosystem to its prior state. Aquatic invasive species are fundamentally altering many of our aquatic ecosystems permanently.

Costs to Human Health

Scientists believe that “coastal ecosystems are frequently invaded by microorganisms from ballast water.”¹⁴ Ships’ ballast water, the number one source of marine invasive species nationwide,¹⁵ often contains viable bacteria and viruses which may injure people who come into contact with the ballast water. The association of agencies in charge of providing drinking water in California found that “[t]he potential threat to the safety of our drinking water supplies from [ballast water] pathogens is enormous.”¹⁷ A study by the Smithsonian Environmental Research Center of ballast water of vessels entering the Chesapeake Bay found that 14 of the 15 vessels sampled contained a strain of cholera

⁸ Wilcove, David *et al.*, “Quantifying Threats to Imperiled Species in the United States,” BIOSCIENCE, Vol. 48, No. 8, pp. 607-15 (Aug. 1998).

⁹ California Regional Water Quality Control Board, San Francisco Bay Region, “Prevention of Exotic Species Introductions to the San Francisco Bay Estuary: A Total Maximum Daily Load Report to U.S. EPA,” p. 7 (May 8, 2000) (“California Report”), at <<http://www.swrcb.ca.gov/rwqcb2/download/Tmdl.pdf>>.

¹⁰ Cohen, Dr. Andrew, San Francisco Estuary Institute, *Ships’ Ballast Water and the Introduction of Exotic Organisms into the San Francisco Estuary*, p. 12 (Oct. 1998).

¹¹ *Id.*

¹² California Report, p. 1.

¹³ *Id.*, p. 3.

¹⁴ Ruiz, Gregory *et al.*, “Global Spread of Microorganisms by Ships,” *Nature*, vol. 408, p. 49 (Nov. 2, 2000).

¹⁵ See, e.g., Carlton and Geller, “Ecological Roulette: The Global Transport and Invasion of Nonindigenous Marine Organisms,” *Science* (1993); Marine Board of the National Research Council, *Stemming the Tide*, National Academy Press, Washington D.C. (1996).

¹⁷ Testimony by Stephen K. Hall, Executive Dir., Association of California Water Agencies, before the Assembly Select Committee on Coastal Protection, Alameda, California (Oct. 5, 1998).

never before identified in the U.S.¹⁸ In 1991, cholera indistinguishable from the Latin American epidemic strain was found in closed oyster beds in Mobile, Alabama during routine monitoring; ballast water is suspected as the source.¹⁹ More recent data reiterate that cholera “can be delivered frequently by ships to estuaries with commercial ports,” creating “an opportunity for the colonization of coastal ecosystems.”²⁰ In 1998, oyster beds in Galveston Bay, Texas, were closed to harvesting because 416 persons in 13 states fell ill after eating raw oysters traced to this location. The oysters had been contaminated by bacteria never before detected in the United States, but common in Asia.²¹ The USDA stated there was a “strong possibility” that the source of the bacteria was ballast water.²²

Economic Losses

The total cost of invasive species to our nation’s economy is staggering, with one leading study estimating a \$138 billion annual pricetag.²³ Aquatic invasive species have a significant impact on industries such as water and power utilities, commercial and recreational fishing, tourism and agriculture. Areas which have been hit the hardest are now engaged in enormously expensive and likely futile efforts at remediation. For example, the Great Lakes and surrounding areas are presently in the midst of a crisis in dealing with the zebra mussel, which was introduced through ships’ ballast water. The zebra mussel colonizes along hard surfaces such as ship’s hulls, water pipes and other shoreline structures.²⁴ The accumulation of these organisms lead to blocked water intake pipes. Additionally, zebra mussels cause adverse economic impacts through their competition for food sources with small fish and other organisms in the Great Lakes, leading to disruptions at higher trophic levels as well. The Great Lakes have been inundated over time by several invasives, and the costs add each year. The Great Lakes states spend about \$10 million per year just to keep a single species, the sea lamprey, from decimating important game fisheries such as salmon and trout.

Species found in the United States also affect other nations’ economies. For example, in the former Soviet Union the comb jelly, a jellyfish introduced into the Black and Azov

¹⁸ Rawlings, Tonya, “Ecology and Ballast-Mediated Transfer of *Vibrio Cholerae* 01 and 0139,” Presentation at the Conference on Marine Bioinvasions, M.I.T., Cambridge, MA (Jan. 25, 1999).

¹⁹ Centers for Disease Control and Prevention, “Morbidity and Mortality Weekly Report,” vol. 42, no. 5, pp. 91-93 (Feb. 12, 1993).

²⁰ Ruiz, Gregory, *supra* note 14.

²¹ See *Non-Cholera Vibrios*, Briefing for the Food Safety Institute, Ellen Doyle, Ph.D., University of Wisconsin, (1998) at <<http://www.wisc.edu/fri/briefs/nonvibri.htm>>

²² See *Shellshocked: Tainted Ballast Water Suspected as Source of Bacteria in Oysters*, HOUST. CHRON. (Sept. 6, 1998).

²³ Pimental, David *et al*, “Environmental and Economic Costs Associated with Non-Indigenous Species in the United States,” Presented at AAAS Conference in Anaheim, California (Jan. 24, 1999).

²⁴ *Id.* at 9.

Seas from the United States through ships' ballast, has virtually destroyed an entire fishery. Since the introduction of this species, fishing take in those seas has diminished 200,000 tons in a five-year period.²⁵

A regional example is found in California, which is currently developing and implementing a multi-billion dollar plan to restore habitat and species in the San Francisco Bay-Delta Estuary. The Estuary is the primary source of water for two-thirds of all Californians, and it supports an agriculture industry that provides nearly half of the fresh fruits and vegetables for the country.²⁶ If the state is not successful in preventing further invasive species introductions, "the restrictions on water deliveries to protect endangered species will be such that we will not even come close to meeting existing demands for water out of the Delta . . . [and] [a]s shortages grow, our economic base and quality of life [in California] will decline since much of our economic prosperity and way of life are dependent on water from the Delta."²⁷ Such concerns are the reason that the California Farm Bureau, the Association of California Water Agencies, and the Metropolitan Water District were strong public supporters of the California ballast water law.

Unfortunately, once established, aquatic invasive species are virtually always "here to stay" due to the difficulty of eradicating them after they have been detected; the costs cited are simply to minimize the damage. For example, the nationwide cost of combating zebra mussels alone totals \$3 billion annually; similarly, the cost of the Asian clam and European green crab totals \$1 billion and \$44 million nationwide each year, respectively.²⁸

Vectors

Ballast water exchange is currently the major cause of aquatic invasive species introductions to the United States.²⁹ Shipping moves over 80% of the world's

²⁵ Harbison and Volvik, "The Ctenophore, *Mnemiopsis leidyi*, in the Black Sea: A Holoplanktonic Organism Transported in the Ballast Water of Ships," *Nonindigenous Estuarine & Marine Organisms: Proceedings of the Conference & Workshops*, NOAA, Seattle, WA (April, 1993); "Invader Threatens Black, Azov Seas," *Science*, Vol. 263, pp. 1366-67 (Nov. 26, 1993); D. Baltz, "Introduced Fishes in Marine Systems and Inland Seas," *Biological Conservation*, Vol. 56, p. 151 (1991).

²⁶ Testimony of Stephen K. Hall *supra* n.17.

²⁷ *Id.*

²⁸ Pimental, David *et al.*, "Environmental and Economic Costs Associated with Non-Indigenous Species in the United States," Presented at AAAS Conference in Anaheim, California (Jan. 24, 1999).

²⁹ See, e.g., Carlton and Geller, "Ecological Roulette: The Global Transport and Invasion of Nonindigenous Marine Organisms," *Science* (1993); Marine Board of the National Research Council, *Stemming the Tide*, National Academy Press, Washington D.C. (1996).

commodities and transfers approximately 3 to 5 billion tons of ballast water internationally each year. A similar volume may also be transferred domestically within countries and regions each year.³⁰ More than 21 billion gallons of ballast water containing living organisms are discharged into U.S. waters every year.³³ Though research has shown the rate of invasions attributed solely to shipping has been increasing exponentially over time,³⁴ scientists believe that the number of invasive species currently identified in ballast water still may “grossly underrepresen[t]” the actual number of invasive species in ships’ ballast.³⁵

In addition to ballast water exchange, there are numerous other vectors for invasive species, some of which are growing. These include coastal and open ocean aquaculture, hull fouling,³⁶ ballast sediments,³⁷ recreational fishing and boating, releases of exotic pets, intentional introductions (such as for a fishery or vegetation “restoration” effort), and aquatic transport of trash.³⁸ Introductions from each of these vectors can have a significant impact on local ecosystems, impacts that can spill over to connected waterways and spread hundreds or even thousands of miles.

An example of a relatively new vector in the United States that will require increased vigilance to control is marine based aquaculture. Marine aquaculture is poised to

³⁰ See <<http://globallast.imo.org/index.asp?page=problem.htm&menu=true>>.

³³ Reauthorization of the 1990 Non-indigenous Aquatic Nuisance Prevention and Control Act: Hearings on S. 1660 Before the Subcommittee on Drinking Water, Fisheries and Wildlife, Senate Environment and Public Works Committee Regarding Non-indigenous Species and S. 1660, (Testimony of Dr. James Carlton, Director of the Maritime Studies Program of Williams College and Mystic Seaport.).

³⁴ Ruiz, Gregory *et al*, “Invasion of Coastal Marine Communities in North America: Apparent Patterns, Processes and Biases,” *Annu. Rev. Ecol. Syst.*, vol. 31, pp. 481-531, at 492-3 (2000); see also National Research Council, *Stemming the Tide: Controlling Introductions of Nonindigenous Species by Ships’ Ballast Water*, p. 11 (1996).

³⁵ Ruiz, Gregory, *supra* n. 34 at 520 (*discussing smaller invading organisms*); see also Wonham, M.J. *et al*, “Fish and Ships: Relating Dispersal Frequency to Success in Biological Invasions,” *Marine Biology*, vol. 136, pp. 1111-1121, at 1111, 1118 (2000) (*discussing invasive fish*).

³⁶ National Sea Grant Program, *The Role of Shipping in the Introduction of Nonindigenous Aquatic Organisms to the Coastal Waters of the United States (other than the Great Lakes) and an Analysis of Control Options*, pp. 24-32 (April 1995).

³⁷ See, e.g., Godwin, L. Scott, “Hull Fouling and Ballast Sediments: The Importance of Vectors Other than Ballast Water in Transporting Nonindigenous Marine Species in the Hawaiian Islands,” Presentation at the First National Conference on Marine Bioinvasions, M.I.T., Cambridge, Mass. (Jan. 25, 1999).

³⁸ Barnes, David, “Invasions by Marine Life on Plastic Debris,” *NATURE*, Vol. 416, pp. 808-09 (April 25, 2002).

become a significant U.S. industry. NOAA has called for a five-fold increase in aquaculture productivity by 2012, with fish raised in pens in open oceans figuring prominently in this plan. While several pilot projects have moved forward in the coastal and open oceans, full-scale finfish aquaculture in the EEZ has not yet gained acceptance in the United States. Significant controversy has already ensued over the production of genetically modified, non-native, or farm-raised native fish. TOC is deeply concerned that aquaculture, without adequate safeguards to ensure these fish cannot escape, presents an enormous potential vector for invasive species.

Other vectors will continue to emerge over time, and the rate of invasion from new species is expected to continue to increase. We have already waited too long for a comprehensive federal approach, and are currently witnessing the devastating effects.

The IMO Convention and Its Limitations: U.S. Must Implement More Protective Measures

Aquatic invasive species threaten the nation's natural ecosystems, economically important fisheries and aquatic supported industry, as well as public welfare and safety. There is no greater environmental threat posed by ships than that of the introduction of aquatic invasive species. We must do everything we can to effect tighter control of ballast water to prevent continuing and growing harm.

In February, the international community established baseline global ballast water management standards to prevent the spread of aquatic invasive species through ballast water. The IMO adopted a new International Convention for the Control and Management of Ships' Ballast Water and Sediments. The IMO Ballast Convention will enter into force 12 months after ratification by 30 states, representing 35 percent of world merchant shipping tonnage.

The IMO Ballast Convention is a reasonable first international step to address a global problem. We commend the U.S. delegation to IMO for its efforts to pursue stringent standards at the Convention. However, even if these international standards are ultimately implemented, TOC believes we must do better in national legislation. The Convention is limited in scope to addressing only a single vector, the standards it does contain are weak, and it does not contain the additional tools or mechanisms needed for prevention and eradication of invasive species. Fortunately, the Convention and international law recognize the right of nations to take more stringent measures. The following section will briefly review the Ballast Convention and its relevance for the United States.

The Convention's Ballast Management Standards are Insufficient

The Convention generally provides that the discharge of ballast water must be in accordance with the ballast water management provisions of the Convention. Ships must have on board and implement a ballast water management plan. The plan, unique to

each ship, will describe the specific management procedures required to comply with given standards. Existing ships will be required to comply after a phase-in period lasting several years.

The IMO Convention adopts an initial standard based on “exchange,” meaning that ships must dispel their ballast water and exchange it for new water.³⁹ Additionally, over a phase in period lasting several years, the Convention provides for a ballast water performance standard.⁴⁰

Unfortunately, the ballast water exchange standard will fail to prevent many aquatic invasive species from entering U.S. waters. Ballast water exchange is an insufficient and outdated standard here in the United States, where we have worked to control aquatic invasive species eradication for a longer time than in most other nations. While the standard may be a realistic floor for the world as a whole, the standard does not reflect what the U.S. needs and what it is currently capable of achieving.

For example, though ballast water exchange is already mandatory for vessels entering the Great Lakes, Canadian and Great Lakes resource management authorities issued a joint letter to the governments of Canada and the United States on July 20, 2001 that calls for further action to prevent aquatic species from entering the Great Lakes. Specifically, they found that “ballast water exchange alone . . . was insufficient to prevent ship-mediated introductions of AIS [alien invasive species].” They recommended that the governments work together to “establish and implement standards, measures, and accountability mechanisms that will prevent the further introduction of alien invasive species to the Great Lakes ecosystems.”

This joint letter was based on the fact that, even with a reported 97% compliance under NISA’s only mandatory ballast water exchange program, a number of new invasive species have become established in the Great Lakes, including round gobies, threespine stickleback, and rusty crayfish.⁴¹ Thus, even if the Convention’s ballast water exchange

³⁹ The Convention requires ships performing ballast water exchange to do so with an efficiency of 95% volumetric exchange of ballast water. For ships exchanging ballast water by the pumping-through method, pumping through three times the volume of each ballast water tank is considered to meet the standard described. Pumping through less than three times the volume may be accepted provided the ship can demonstrate that the standard of at least 95% volumetric exchange is met. *See* I.M.O. CONVENTION, Annex, Reg. B-4, Reg. D-1 (2004).

⁴⁰ Under the performance standard, ships conducting ballast water management shall discharge less than 10 viable organisms per cubic metre greater than or equal to 50 micrometers in minimum dimension and less than 10 viable organisms per milliliter less than 50 micrometers in minimum dimension and greater than or equal to 10 micrometres in minimum dimension; and discharge of the indicator microbes shall not exceed the specified concentrations. *See* I.M.O. CONVENTION, Annex, D-2 (2004).

⁴¹ California Report at 9, 19, 24-25.

program is implemented, experience to date in the Great Lakes shows that it will fail to adequately protect U.S. waters from invasive species in the long term.

Moreover, vessel operators themselves believe that “[b]allast water exchange should be viewed as a short-term solution only,”⁴² and at least one major port has found that “present ballast exchange methods should be viewed as a ‘stop-gap’ measure which can minimize, but not prevent, foreign species translocations and introductions.”⁴³ There are numerous variables that limit the effectiveness of ballast water exchange.⁴⁴ These include: difficulty of completing an adequate exchange (which is the reason that effectiveness has been found to range from over 90% down to only 10%),⁴⁵ species becoming trapped in sediments, difficulty of verification, duration or route of voyage (which may make full, at-sea exchange impossible), safety considerations, technological limitations, and other factors.

Although the IMO ballast water convention also contains a ballast water performance standard, this is static and therefore neither standard will promote technological innovation or improved environmental performance over time. In moving from exchange to a performance standard, there is a need to provide incentive for ships to not only go beyond the status quo of exchange but to continually utilize better technologies. Laboratory and shore side prototypes can only go so far, we need to know what works in the real world and what is practically achievable for the industry.

In developing ballast water treatment technologies, we must also ensure the particular treatment doesn’t cause more harm than it redresses. While the Convention requires parties to ensure that ballast water management practices do not cause greater harm than they prevent to their environment, human health, property or resources, or those of other nations, there are no principles to direct this requirement and thus its utility is limited.

Finally, the phase-in periods are years too long. The standards are based on either exchange or performance, and not on the use of a particular technology. Ships could feasibly implement these standards relatively quickly without the economic constraints of investment in any particular treatment technology or change in ship design. Thus, there is no economic or other justification for phasing in the implementation of the standards over several years.

Convention is Limited in Scope to Ballast Water as the Sole Vector

⁴² Port of Oakland, “Berths 55-58 Project Draft Environmental Impact Report,” App. F, p. 41 (Dec. 1998).

⁴³ *Id.*, p. 9.

⁴⁴ *See, e.g., id.* at 9, 24-25, 31.

⁴⁵ *Id.*, p. 9; *see also* Rigby, Geoff, “Progress in the Management and Treatment of Shipping Ballast Water to Minimise the Risks of Translocating Harmful Nonindigenous Marine Organisms,” Presentation at the First National Conference on Marine Bioinvasions, M.I.T., Cambridge, Mass. (Jan. 26, 1999).

The Convention addresses only ballast water as a pathway for invasive species, and not any other known vector such as hull fouling, intentional introductions or others. Thus, even if the U.S. enacted legislation implementing the Convention's terms, or legislation on ballast water management generally, we would be providing an incomplete solution to a multi-faceted problem.

Convention Provides No Additional Tools for Prevention or Rapid Response and Eradication

The Convention doesn't provide the additional tools beyond ballast water management that are necessary for a comprehensive program to prevent and mitigate the spread of invasives, such as rapid response and screening. The IMO and the Convention have attempted to provide mechanisms for the dissemination of known technology to developing nations; however, with few nations acting unilaterally to regulate ballast water exchange, there has been very little economic demand for ballast water treatment technologies. The result has been little research or innovation.

To conclude, the Convention does not provide a structure that will ensure the timely development and implementation of state of the art treatment technologies, on ship and onshore. The U.S. should act to reauthorize NAISA to significantly strengthen and expand upon the foundation laid by the IMO Ballast Convention.

Convention and International Law Fully Support Unilateral Action

The U.S. is not only encouraged to take more protective measures, the U.S. is specifically permitted to do so. The IMO Convention acknowledges explicitly that nations have the right to take, "individually or jointly with other parties, more stringent measures with respect to the prevention, reduction, or elimination of the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast Water and Sediments, consistent with international law."⁴⁶

International law is found in the United Nations Convention on the Law of the Sea (Law of the Sea), which recognizes the right of individual nations to take unilateral measures to protect their marine resources and territory from incoming invasive species.⁴⁷ UNCLOS

⁴⁶See IMO CONVENTION, Art. 2-3. In addition, parties should ensure that ballast water management practices do not cause greater harm than they prevent to their environment, human health, property or resources or those of other States. See IMO CONVENTION, Art. 2-7.

⁴⁷Article 196(1) of UNCLOS provides that "states shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control, or the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto." Article 56 more broadly

specifically grants coastal states broad authority to establish requirements as a condition of entry into port.⁴⁸ The existing NISA, and the current reauthorization legislation, require ballast water management and treatment as a condition of entry into port, thus including all ships that will enter U.S. ports as permitted by UNCLOS. While UNCLOS additionally grants authority to effect environmental controls over ships operating within the territorial sea⁴⁹ and within the EEZ,⁵⁰ the NAISA legislation purports to exercise

grants coastal states “sovereign rights” within their exclusive economic zone for the purpose of (among other things) “conserving and managing the natural resources,” as well as jurisdiction over “the protection and preservation of the marine environment.”

⁴⁸ The specific rights of a coastal nation to effect controls over incoming and transiting ships is discussed in Articles 211 and 21 of UNCLOS. Article 211, which generally discusses the regulation of pollution from vessels, permits a coastal state to establish particular requirements for the prevention, reduction and control of pollution of the marine environment for this purpose.

⁴⁹ Article 21 of UNCLOS discusses the rights of a coastal state within its territorial sea to adopt laws and regulations for several purposes, including the conservation of the living resources of the sea, the prevention of infringement of the fisheries laws and regulations of the coastal state, the reduction and control of pollution thereof, and the prevention of infringement of the customs, fiscal immigration or sanitary laws and regulations of the coastal nation. These are subject to some limiting language in 21.2, preventing the imposition of restrictions on design, construction, manning or equipment upon a foreign ship in innocent passage unless giving rise to “generally accepted international standards.”

⁵⁰ Article 211 recognizes the rights of coastal states, where “conforming to and giving effect to generally accepted international rules and standards established through the competent international organizations....”. Recent efforts by the Senate and Administration to ratify the Law of the Sea treaty support the interpretation that UNCLOS permits nations the latitude to protect against pollution from foreign ships, including ships trafficking in the territorial sea as well as ships in the exclusive economic zone. See Resolution Urging Ratification, with Declarations and Understandings, Senate Foreign Relations Committee, (February 25, 2004), and Letter to Senators Lugar and Biden, William H. Taft, Legal Advisor to the Department of State, March 1, 2004, (*confirming the Administration’s understanding that UNCLOS does not require the US to supplement or modify its domestic law related to the protection of the marine environment, human health, safety, conservation of natural resources, further that these laws are consistent with UNCLOS.*) Moreover, the United States and other nations have imposed regulation where necessary to prevent pollution from ships operating in coastal waters, consistent with UNCLOS. In the past, the U.S. has acted to prevent pollution coming from ships operating even in the exclusive economic zone, as in the case of the Oil Pollution Act of 1990. The Clean Water Act also authorizes regulation of some activities on ships operating in the territorial sea as well as the contiguous zone. Just last year the European Union sought to impose environmental protections following the oil spill disaster of the *Prestige*, a ship trafficking outside of a coastal territorial sea.

control only over those ships trafficking in the territorial sea, and exempts ships operating in the Exclusive Economic Zone.

**NISA Reauthorization through NAISA and AISRA:
Together the Bills Provide the Baseline for a Comprehensive National Solution**

The NISA legislation currently pending before Congress provides the necessary floor for deliberation concerning the appropriate strength and scope of a federal program to protect against invasive species. As noted earlier in my testimony, in the House the legislation is divided into two components. NAISA, which contains ballast water provisions, rapid response and screening mechanisms, has been referred to the Transportation and Infrastructure Committee. Research and further grant provisions contained in AISRA have been referred to the Resources Committee. In the following section, I will generally consider these two bills together, under the rubric of issues that must be addressed in any NISA reauthorization. In some cases, I will urge strengthening amendments.

Ballast Water Management Must Facilitate Continued Improvement

The first issue I will speak to is the imperative that NISA reauthorization legislation must contain a ballast water standard that facilitates improvement over time. NAISA utilizes an interim standard based on exchange,⁵¹ but tightens the final standard to require application of the best available technology for the applicable category or class of vessels. This is necessary to promote economic and environmental stringency, as well as technological innovation. As noted earlier in the context of the Convention, establishing a single uniform standard – whatever it may be – fails to promote improvement over time. TOC recommends that the standard be further linked to a finding, as in the Clean Water Act, that the goal of legislation should be zero discharge of invasive species.⁵²

NAISA also includes recognition of new sources, yet fails to impose a higher performance standard for these sources. New sources can more cost-effectively incorporate more stringent treatment technologies than existing vessels. TOC recommends that the legislation be amended to require a higher standard for new sources. For example, under the Clean Water Act, new sources are subject to “new source performance standards” that are based on “state of the art” technology, which are generally more stringent than standards for existing sources.⁵³ These standards require the greatest degree of effluent reduction for an individual class, and protect the investment of dischargers in these improved treatments for a fixed period. This system

⁵¹ The interim standard for ballast water exchange shall be an operational 95% volumetric exchange of ballast water. The interim standard for ballast water treatment shall be a biological effectiveness of 95% reduction in aquatic vertebrates and invertebrates, phytoplankton, and macroalgae.

⁵² Currently the standard is linked to a “minimum risk” standard, which is difficult to assess.

⁵³ See 33 U.S.C. Sec. 1316.

ensures that over time dischargers will incorporate more sophisticated technologies, and provides incentives for innovators to continue to develop better treatments.

NAISA would also improve treatment methods for aquatic invasive species by requiring EPA to promulgate regulations to evaluate treatment methods to ensure no adverse effects on human health, public safety or the environment result from their use.

The legislation would additionally address a growing problem – ships that avoid ballast water management through their current characterization of NOBOBs, ‘no ballast on board.’ According to the Great Lakes Panel on Aquatic Nuisance Species, nearly 80 percent of oceangoing commercial ships are in a NOBOB condition upon entry, which exempts them from open-ocean ballast exchange requirements. However, even “empty” ballast tanks contain residual water and sediment that may harbor organisms that can be discharged when new water is added to the tanks and later expelled. Refilling and emptying ballast tanks is also believed to be a mechanism for expanding the range of aquatic invasive species already present in the Great Lakes. These vessels have become a growing problem on the Great Lakes, where they contribute to the spread of invasives yet avoid the mandatory exchange requirements that other shippers in the Great Lakes must follow.⁵⁴ By moving towards ballast treatment instead of solely exchange, while providing better research and response mechanisms, the legislation should lead to the identification of long term approaches to address the problems associated with NOBOBs.

Legislation Must Address Other Potential Vectors Through Identification of these Vectors, Screening Mechanisms and Facilitation of Rapid Response

As I have testified earlier, ballast water is one of growing number of vectors that spread invasive species. Both NAISA and AISRA would address these other vectors for the first time, a needed improvement in any federal legislation. They would establish a priority pathway management program, by directing the Aquatic Nuisance Species (ANS) Task Force to conduct pathway analysis to identify the highest risk pathways for introduction of aquatic invasive species and implement management strategies to reduce these introductions. Additionally, the Invasive Species Council would be directed to develop a set of screening guidelines for federal agencies to use to determine whether a planned importation of a live organism from outside the country into the U.S. should proceed, and if so, whether that importation should be conditioned. Where there are gaps in federal authority, the Act requires the Director of the U.S. Fish and Wildlife Service to screen the organisms. Grants are created to help states perform their own screening processes in addition to the federal process. All of these are important improvements to reduce the unintentional introduction of invasive species.

Aquatic invasive species are far more difficult to control once established than terrestrial species, and thus quick detection of, and rapid response to, new invasions is critical.

⁵⁴ See <<http://www.glc.org/advisor/01/ballast.pdf>>

Consider the example of one species that could have been controlled had the U.S. already utilized these provisions. An invasive green algae dubbed “killer algae” (*Caulerpa taxifolia*) was discovered in the waters of Southern California in early 2000. Native to tropical waters, it became popular in the aquarium trade in the late 1970s and either escaped or was released into the Mediterranean Sea in the mid-1980s. It is now widespread throughout much of the northwestern Mediterranean. It appears that the algae found off Southern California is a clone of the released Mediterranean plant, and can grow in deeper and colder waters than the tropical populations.

Its impacts have been compared to unrolling a carpet of Astroturf across the seabed. In areas where it has become well-established, it has caused economic and ecological devastation by overgrowing and eliminating native seaweeds, seagrass reefs, and other communities. Efforts to destroy this single patch of algae in Southern California have involved tarping off the affected area and injecting chlorine under the tarp. Even with this drastic and costly effort, which killed virtually everything under the tarp, the algae is still not completely gone. Moreover, the treatment was paid for primarily with hurriedly-assembled state funds; in states without such funding, such an invasion could have spread even more quickly, with devastating effects.

The reauthorization legislation would allow for the early detection and monitoring of invasives, and provide much needed federal rapid response mechanisms. The National Invasive Species Council’s (NISC) ANS Task Force, in consultation with other agencies, is to develop a set of sampling protocols, a geographic plan, and a budget to support a national system of ecological surveys for rapid detection of aquatic invasive species. This national system would establish clear lines of communication and help identify pathways causing distribution of newly detected aquatic invasive species.

Both AISRA and NAISA would make emergency funding available to states and regions to implement approved rapid response contingency strategies. The ANS Task Force is directed to develop model state and regional rapid response contingency strategies to aid states and regions in the development of appropriate strategies. The (NISC) is directed to establish a Federal Rapid Response Team to implement eradication and control responses on federal land; assist in implementing rapid response measures on non-federal lands; and provide training to state, tribal and regional rapid responders.

Finally, the legislation would address the vector of hull fouling through its general research provisions, and through the education and training program directed towards marine and marina operators. These tools are necessary to provide the authority and resources sufficient to address invasive species.

Legislation Must Provide for Needed Information, Research, and Education

We are learning more each day about invasives and how they are spread, and there is a continuing need to expand upon this research. NISA’s current research and monitoring provisions provide limited research into ballast water management practices and the

status of affected environments. Fortunately, these have been extended and expanded in the NAISA legislation. Additionally, AISRA would provide much needed additional research, including on non-ballast vectors. The research priorities are an integral component of the AISRA and are widely supported by our colleagues in the environmental community.⁵⁵ Some key programs newly proposed include:

- Development and implementation of ecological surveys at various sites to document baseline ecological information, identify pathways, and track the establishment of species;
- Development and implementation of pathway surveys to monitor those of high risk and determine practices contributing to their introduction;
- Analysis of the pathways of introduction to identify increasingly effective management actions and standards to reduce introductions and establishment;
- Dissemination of information to the public and appropriate agencies and institutions; and
- Promotion of environmentally sound and occupationally safe methods and treatment technologies for preventing, controlling and eradicating aquatic invasive species.

These provisions provide the necessary federal tools and guidance to improve our ability to detect and respond to invasive species. Currently states across the country are doing what they can to protect their borders from invasives, yet they have strongly advocated for increased federal participation.⁵⁶

Stable Sources of Funding must be Added

Implementation of NISA's ballast water management program and research has been inadequate in part because of the lack of critical funding. These programs include: enforcement of ballast exchange regulations and guidelines, the Ballast Water Demonstration Program, research and outreach grants, the National Ballast Information Clearinghouse, and state Aquatic Nuisance Species Management Plans.

Unfortunately, annual appropriations for these programs has been lacking. For example, research has been hampered by a lack of funding, coordination, standardization and access to data. A lack of needed research impairs the nation's ability to assess the effectiveness of ballast water management methods, roles of other sources of aquatic invasives, and the state of invasions in the nation's waters.

It would be unrealistic to provide substantially broader authority and responsibility for several federal agencies without providing them with the necessary financial support to meet their obligations. Regular, stable and increased funding is essential to the success

⁵⁵ Several environmental organizations have endorsed these provisions in the reauthorization legislation as introduced, including the National Wildlife Federation, Defenders of Wildlife and The Nature Conservancy.

⁵⁶ Halting the Invasion: State Tools for Invasive Species Management, ENVIRONMENTAL LAW INSTITUTE, (August 2002).

of the program. In addition to significantly higher authorization of appropriations, TOC recommends the creation of a fund supplemented through user fees to be used for enforcement and rapid response. For example, the Clean Water Act has achieved general success in regulating point source discharges through its permit program, under which water users and dischargers pay fees for the enforcement and implementation of the Act.⁵⁷ Similarly, the California ballast water program includes fees of \$400 per qualifying vessel voyage, and as a result is more adequately funded and far more successful than its federal counterpart. We urge the Committee to consider strengthening the NAISA bill by adding a fee program to ensure the success of the overall program.

Legislation Must Provide Accountability Through Enforcement

Reporting on ballast water exchange was made mandatory in 1996 by amendments to the NISA program. However, compliance with even this initial step has been abysmal because of a lack of enforcement. The first and only report by the National Ballast Information Clearinghouse, issued in October 2000, found that only about one fifth of the vessels that entered U. S. waters from outside the EEZ filed the *mandatory* reports required under NISA.⁵⁸ Of those vessels that did report, only about one-fifth of those who stated an intent to discharge ballast water reported having performed a complete, mid-ocean ballast exchange. However, analysis suggested that a “significant proportion” of the ballast water volume reported as exchanged in mid-ocean actually came from coastal areas.⁵⁹

Across the nation, compliance with mandatory reporting requirements improved only slightly over the 12-month period, remaining between 23% and 29% from October 1999 through June 2000. Only for the West Coast of the contiguous U.S. did compliance with the reporting requirement increase markedly over time, primarily from an increase in California, which receives the most ship arrivals. This increase coincided with implementation of the 1999 California state law that requires submission of copies of the federal ballast water management reports to the State Lands Commission, authorizes monetary and criminal penalties for noncompliance, charges fees for maintenance of the program, and utilizes an active boarding program that targets 20-30% of arrivals, far higher than the level of boarding by the Coast Guard during that period. As a result, compliance with reporting in California increased over the 12-month reporting period to approximately 75% and remains higher today.

The report concluded that due to the poor nationwide reporting rate, it is difficult to

⁵⁷ Dischargers to publicly owned treatment works face charges that are generally based on volume or volume multiplied by toxicity weights, and can range from under \$100/month to \$90,000/month.

⁵⁸ Smithsonian Environmental Research Center, “National Ballast Information Clearinghouse Interim Report,” (October 2000), <http://invasions.si.edu/NBIC/ballast.htm>.

⁵⁹ *Id.*

estimate reliably: (a) patterns of ballast water delivery and (b) compliance with NISA's voluntary guidelines for ballast water management. In other words, compliance with the mandatory reporting requirement in NISA was so low that the Coast Guard did not even have enough data to determine whether NISA's voluntary ballast water management program should become mandatory. Today, reporting in California is well over 3 times that of the rest of the nationwide. California agencies use the funding available from the fee program to board over 25% of the incoming vessels as part of the enforcement program, further boosting compliance.

The current reauthorization legislation would increase penalties but lacks any of the other tools utilized in California, such as an active boarding program. As such the legislation fails to provide the means to ensure the success of its ambitious new programs. It is widely accepted that the nation is facing an *increasing* rate of aquatic species invasions. After over a decade of effort under NISA and its predecessor the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), it is evident that we need substantially stronger enforcement tools to effectively prevent and control the introduction of invasive species into the nation's waters. We urge strengthened enforcement and funding provisions be added to the reauthorization legislation to accomplish this.

Conclusion

The known costs of failing to regulate invasive species discharges – in the order of billions of dollars to date – are far higher than the costs associated with regulation. On top of these known costs is the “the incalculable cost of loss of biodiversity”⁶¹ that aquatic invasive species have caused and continue to cause in the absence of an effective control program. We urge Congress to act quickly to prevent further permanent damage to the nation's waterways and the people, wildlife and industries that depend on them.

⁶⁰ Letter from Mary-Ann Warmerdam, California Farm Bureau Federation to Senator Byron Sher, Senate Environmental Quality Committee, California State Senate (July 1, 1999).

⁶¹ California Report at 101.